

Production Oriented Survey (POS) on Different Aspects of Rice Cultivation and Farmers Practices in Konkan Region of Maharashtra State

M. P. Gawai, B. D. Waghmode, P. D. Patil, V. V. Sagvekar and V. P. Sawant
Regional Agricultural Research Station, Karjat - 410 201, Raigad, Maharashtra
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Abstract

Production oriented survey (POS) on rice cultivation was conducted by Regional Agricultural Research Station, Karjat, Raigad, Maharashtra under programme of AICRIP, Directorate of Rice Research (ICAR), Rajendranagar, Hyderabad-50003 during Kharif, 2023 in Konkan region of Maharashtra state, India. Konkan region is distributed as north Konkan and south Konkan. The popular commercial cultivars planted in the region were Suma, Karjat-2, Karjat-3, Karjat-6, Karjat-7, Karjat-9, Sonal, Kaveri Sona, Safal 1010, Shubangi, Rupali, Avani, Chintu, Trupti, NP-125, Hashita, Vijaya, Janaki, Ratnagiri-6, Ratnagiri-5, MTU-1010, MTU-7029, Sundar, Indrayani, Jaya, Komal, Karjat-5, Akshet, Daptari-108, Manisha, Dapadari-125, Suprema Sona, Spriha 911, Shabri, Silkey, Shree 1001, Avani, Devaki, Zordar, Raja, Suvarna, YSR, Komal 101, Silky 277, Wadakolam, Dapturi, Durga, Mahuli, Mahalaxmi, Saguna, Kuber, Sindhu, Sampada, Punam, Kranti, Punam Gold, Akshad, Komal-101, Gangotri, Bhavna, Vikrant, Swabagya, N.P.H.-242, Gaytri, Asmita, Sarathi, Ratnagiri-8, Sadna, Prasanya, Vaishnavi, Pooja, Sairam, Suvarna, Punam, Sri 100, Gold 78, Kranti-89, Avni, Jaishriram Gold, Shatayu, Samrudhi and Om Shri Ram; Hybrids: Raja, Ankur 7576, Syn 5251, Loknath 505, Goraknath, Mahiko 6529, Upaj, Mahiko 5556, Ankur-6444, Arise 6444, Kaveri 9090, NPH, Loknath, Arize6129, NPH 30, Ankur 7434, NP-150, Nirmal-NPH, Tej Gold, NP-125, Goraknath, Rashi-113 including local land races Wada Zinia and Wada Kolam. Rice is cultivated as mono crop in this region which predominantly depends on monsoon, which determines the success of kharif crops. Biotic constraints like blast, sheath blight, sheath rot, false smut, grain discoloration and bacterial leaf blight (BLB) were in low to moderate intensities. Among insect pests stem borer, leaf folder, gundhi bugs and rats were recorded in low intensities in the surveyed districts. Among weeds, *Isachneglobosa*, *Cyperusdufformis*, *Cyperusrotundus*, *Cyperusiria*, *Echinochloacolona*, *Echinochloacrusgalli*, *Eleusineindica*, *Convolvulus arvensis*, *Celosia argentea*, *Ludwigiaoctovalvis*, *Ischaemumrugosum*, *Ischaemumrugosum*, *Alternanthera triandra*, *Brachiariamutica* (*Para grass*), *Amaranthus spinosus*, *Leptochloachinensis*, *Alternanthera ficoidea*, *Saccharum spp.*, *Saccharum spontaneum*, *Coixlacryma-Jobi*, *Digitariasanguinalis*, *Cynodondactylonand Mimosa pudica* were major problem in all the districts. The farmers used mainly hand weeding for control of weeds. No herbicides were used to control the weeds. Minimum use of pesticides and insecticides were observed.

Key words :

Production oriented survey (POS) on rice cultivation was conducted by Regional Agricultural Research Station, Karjat, Raigad, Maharashtra under programme of AICRIP, Directorate of Rice Research (ICAR), Rajendranagar, Hyderabad-50003 during Kharif, 2023 in Konkan region of Maharashtra state, India. Konkan region is distributed as north Konkan and south Konkan and rice crop is gamble of monsoon which is predominantly depends on monsoon, which determines the success of *kharif* crops. Commencement of monsoon is

during first week of June up to September with an average rainfall of 3500 -4000 mm but many times there are late showers during November which damages the harvested crop as well as standing crop. The cropping sequence was rice-rice, rice-vegetables if irrigation is available, otherwise yard field beanon residual moisture as a relay crop and in some packets of south Konkan groundnut is cultivated after rice. Most of the farmers practiced rabbing before preparation of nursery. The application of basal fertilizers *viz.*, N, P₂O₅ and K₂O were in less

quantity. The primary aim of Production oriented survey (POS) is to collect information on various aspects of rice cultivation viz., general weather and crop conditions, varieties cultivated in a particular region and yield range, extent of use of organic manure and inorganic fertilizer, different inputs and their availability, different biotic and abiotic problems and their management in different states. The survey assesses the needs and problems of the farmers and determines their degree of knowledge and perceptions of crop management problems. POS gives information about the various constraints faced by the farmers in dealing with the problems. The survey also provides information on various indigenous technical knowledge of the farmers regarding rice cultivation. These surveys can help to identify the gaps in knowledge that need to be addressed by research and extension with objective to study the practices and constraints in rice cultivation and suggest suitable remedial measures on the spot to solve the farmers problems, if any as well as to minimize input costs and suggest methods to avoid any wasteful practices.

Materials and Methods

Description of study area : In Konkan region of Maharashtra state, five districts which are distributed as south Konkan namely Sindhudurg and Ratnagiri districts where as north Konkan namely Raigad, Thane and Palghar districts were surveyed during the kharif cropping season, 2023. Among five districts, twenty-eight tahsils and ninety-four village were surveyed thoroughly comprising ninety-sevenfarmers (Table 1).

Methodology and collection of data

Production Oriented Survey (POS) was conducted by IIRR-ICAR in collaboration with SAUs and State Department of Agriculture on different aspects of rice cultivation in different rice growing states of India during the main crop season (June-July to November-December). The survey is based on both eye-ball survey and questionnaire-based survey. The different aspects that are covered in the survey are prevailing climatic conditions for rice cultivation,

Table 1. Particulars of survey in different districts, tahsils and villages of Konkan

District	Tahsils	Villages
Sindhudurga	Kankavali, Kudal, Malvan, Sawantwadi, Vengurla and Dodamarg	Lore No.1, Phondaghat, Karul, BambardeTarf, Wasoli, Zarap, Aamberi, Dhamapur, Kalse, Sawantwadi, Talawade, Wyetye, Insuli (Banda), Bhendmala, Aansur, Tulas, Zarebambar, Ghotage, Maneri and Sasoli
Ratnagiri	Dapoli, Chiplun, Rajapur, Ratnagiri, Lanja, Khed and Sangmeshwar	Shiwnari, Sakhaloli, Talsure, Aagve, Kokre, Kondmala, Juvathi, Kondaye, Hativale, Golap, Bhatye, Shirgaon, Kuve, Kurne, Punas, Gunade, Ambdas, Bhelsai, Ozarkhol, Kolambe, Manaskond and Phansavale
Raigad	Karjat, Panvel, Khalapur, Mahad, Uran and Mangaon	Ladiwali, Varai, Vadap, Kiravali, Wanjale, Khanavale, Poyanje, Barvai, Nadal, Chauktarapur, Hatnoli, Jambhivali, Kurle, Karanjadi, Revtale, Kalamsure, Bhom, Dighote, Lonere, Potner and Salegaon
Thane	Kalyan, Bhiwandi, Murbad and Shahapur	Goveli, Bapsai, Kolimb, Kunde, Kolivali, Angaon, Borpada, Vaghivali, Kakadpada, Kanol, Shelari, Shiravali, Kinhavali, Partoli and Cheravali
Palghar	Palghar, Mokada, Wada, Jawhar and Vikramgad	Sagave, Vadrai, Mahim, Charanwadi, Takpada, Ghatkarpada, Sawarkhand, Chendwali, Golghar, Vangani, Kashivali (Tarf), Rajanpada, Walwande, Sajan, Vasuri and Alonde

Table 2. Widely grown varieties in Konkan

District	Varieties
Sindhudurga	HYVs: Jaya, Sonam, Suvarna, Komal 101, Sri 100, Rupali, Komal, Shubhangi, Chintu, Kranti-89, Avni, Jaishriram Gold, Vaishnavi, Trupti, Punam, Shatayu, Indrayani and Others Hybrids: Arize 6444, Gorakhanath, Arize 6129, NPH 30 and Others Locals: Wada Kolam
Ratnagiri	HYVs: Komal101, Jaya, Sonan, Karjat 2, Sarathi, Ratnagiri 8, Sadna, Rupali, Trupti, Prasanya, Vaishnavi, Pooja, Wada Kolam, Sairam, Chintu, Suvarna, Punam, Karjat 9, Karjat 7, Karjat-3, Ratnagiri 6 and Others Hybrids: Arize 6444, Ankur 7576, SYN 5251, Loknath 505, Gorakhnath, Mahiko 5629, Upaj, Mahyco 5556, Ankur 6444 and Others
Raigad	HYVs: Jaya, Suvarna, Komal 101, Zordhar, Gangotri, Karjat-3, Karjat-7, Sonal, Kaveri Sona, Safal 1010, Shubhangi, Rupali, Avani, Supersona, Chintu, Trupti, NP125, Hashita, MTU1010, Karjat-5, Vijaya, Janaki, Bhavna, Vikrant, Swabhagya, N.P.H-242, Gaytri, Kranti, Asmita and Gold 78 Hybrids: NP-150, NP-125, Nirmal-NPH and Tej Gold Locals: Wadakolam
Thane	HYVs: Jaya, Jordar, YSR, Rupali, MTU 1010, Karjat3, Komal, Karjat5, Akshet, Daptari108, Manisha, Daptari125, Suprema Sona, Komal 101, Spriha 911, Shabri, Silky, Silki 277, Shree 101, Avani and Devaki Hybrids: Arize 6444, Kaveri 9090, NPH Loknath, Ankur 7434, NP 125, Gorakhnath Locals: Vada Kolam
Palghar	HYVs: Suma, Karjat3, Karjat6, Ratnagiri5, MTU1010, MTU7029, Sundar, Indrayani, Zordar, Raja, Suvarna, YSR, Komal 101, Silky 277, Wadakolam, Dapturi, Durga, Mahuli, Mahalaxmi, Saguna, Kuber, Sindhu, Sampada, Punam, Kranti, Punam Gold, Akshad, Samrudhi and Om Shri Ram; Hybrids: Raja, Rashi 113 and others Locals: Wada Zinia

Table 3. Particular of rice area in Konkan region

District	Total geographical area (ha.)	Total cultivable area (ha.)	Total cultivated area (ha.)	Net irrigated area (ha.)	Area sown under Rice (ha.)
Sindhudurg	504000	348600	140500	2832.27	61518.93
Ratnagiri	816400	558500	253400	11874	68088.37
Raigad	686800	282500	161900	9455.5	98918.86
Thane	464000	214900	164300	1181.27	54923.21
Palghar	469700	176300	142200	782.52	77426.68

varietal profile in a particular region, extent of use of organic manure and inorganic fertilizers, occurrence of different biotic and abiotic problems and their management and various

needs of the farmers and problems faced by the farmers.

Results and Discussion

Production oriented survey was conducted in the Konkan region of Maharashtra is predominant rice growing belt with an average productivity of 2.69 (3.83 rough rice) t ha⁻¹. The region comprises of five districts viz. Sindhudurg, Ratnagiri, Raigad, Thane and Palghar, during *Kharif* 2023 season on 3.61 lakh ha area was under high yielding rice

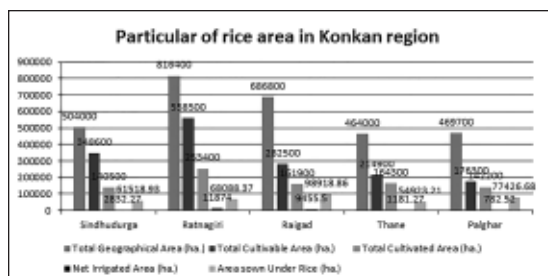


Table 4. Biotic constraints (diseases and pests) in different districts of Konkan during 2023

Districts	Diseases						Pests					
	Bl	ShBl	ShR	FS	GD	BLB	SB	LF	GLH	AW	GB	CRB/Rats
Sindhudurg	L-M	-	L-M	L-M	L	-	L	L	-	-	L	L
Ratnagiri	L-M	M	M	M	L	L	L-M	L	-	L	L	L
Raigad	L	L	M-S	M-S	L	M-S	L	L	L	-	L	L
Thane	L	-	L-M	L-M	L	M-S	L	L	-	-	-	L
Palghar	L	-	L	L-M	L	M-S	L	L	-	-	-	L

Bl: Blast, ShBl: Sheath blight, ShR: Sheath rot, FS: False smut, GD: Glume discoloration, BLB: Bacterial leaf blight, SB: Stem borer, LF: Leaf folder, GLH: Green leaf hopper, AW: Armyworm, GB: Gundhi Bug, L: Low; M: Moderate; S: Severe.

varieties. The survey was conducted during dough to maturity stage of rice in 20 villages of 6 tahsils in Sindhudurg, 22 villages of 7 tahsils in Ratnagiri, 21 villages of 6 tahsils in Raigad, 15 villages of 4 tahsils in Thane and 16 villages of 5 tahsils in Palghar districts. Date of transplanting was delayed due to delay in arrival of monsoon during this year. Nursery management and fertilizer application were not as per recommended practice. Farming in this region is depends on monsoon, generally random transplanting method is followed, due to geographically low land no other crop rice is possible. The maximum rainy days in Sindhudurg, Ratnagiri, Raigad and Thane districts were 107, 106, 92 and 92 days, respectively. Whereas, the highest rainfall was in Ratnagiri district (4005.2 mm) received in 106 rainy days. Total rainfall and its distribution in Konkan region were much satisfactory. Most common cropping patterns adopted by farmers in the region are rice-fallow, rice-pulses, rice-vegetables and rice-groundnut. Some farmers also adopted rice-marigold/jasmine cropping sequence, in Palghar and Sindhudurg district rice-finger millet, rice-barnyard millet, rice-maize, rice-sunflower and rice-sesamum cropping system is followed. In Palghar district goat farming is practiced where as in Raigad district fish farming. Pulses such as horse gram, green gram, chick pea, pigeon pea, black gram, moth bean, cowpea, kidney bean cultivated on

residual moisture, whereas lady's finger, cucurbits, dolichols bean, chilly, tomato, turmeric after kharif rice is also a common practice in Konkan region.

Among weeds *Isachneglobosa*, *Cyperusdufformis*, *Cyperusrotundus*, *Cyperusiria*, *Echinochloacolona*, *Echinochloacrusgalli*, *Eleusineindica*, *Convolvulus arvensis*, *Celosia argentea*, *Ludwigiaoctovalvis*, *Ischaemumrugosum*, *Alternanthera triandra*, *Brachiariamutica*(Para grass), *Amaranthus spinosus*, *Leptochloachinensis*, *Alternanthera ficoidea*, *Saccharum spp.*, *Saccharum spontaneum*, *Coixlacryma-Jobi*, *Digitariasanguinalis*, *Cynodondactylon* and *Mimosa pudicawere* were a major problem. Generally, hand weeding was practiced. No herbicides were used to control the weeds. Regarding biotic stresses *viz.*, diseases low to medium incidence of blast, sheath blight, low to severe incidence of sheath rot, false smut, bacterial leaf blight, low incidence of grain discoloration were observed, infecting mostly high yielding varieties. Among the insect pests namely Stem borer, Armyworm, Gundi bug, rats were observed. But in low intensity it was observed that farmers generally did not follow standard methods of plant protection measures. For control of stem borer and gundi bug dimethoate 30% EC (2 ml l⁻¹), imidacloprid 0.5

ml l⁻¹), chlorpyrifos (1-2 ml l⁻¹) and cypermethrin (1-2 ml l⁻¹) was practiced. To control diseases namely blast, sheath blight, hexaconazole or tricyclazole @ 1ml per liter of water was followed. Farmers did not follow the recommended plant protection measures to control either the disease or insect pests. Eighty per cent of rice grown areas of the district covered by high yielding variety. Average yield during previous season was recorded 2.5 to 3.0 t ha⁻¹.

Conclusion

Rice is cultivated as mono crop under rainfed condition in Konkan region of Maharashtra State. In some packets as per availability of irrigation water vegetables are cultivated. More than 80% of total area under rice in Konkan region is under popular commercial varieties. The popular commercial cultivars Suma, Karjat2, Karjat3, Karjat6, Karjat7, Karjat9, Sonal, Kaveri Sona, Safal 1010, Shubangi, Rupali, Avani, Chintu, Trupti, NP125, Hashita, Vijaya, Janaki, Ratnagiri6, Ratnagiri5, MTU1010, MTU7029, Sundar, Indrayani, Jaya, Komal, Karjat5, Akshet, Daptari108, Manisha, Daptari125, Suprema Sona, Spriha 911, Shabri, Silky, Shree 1001, Avani, Devaki, Zordar, Raja, Swarna, YSR, Komal 101, Silky 277, Wadacolam, Dapturi, Durga, Mahuli, Mahalaxmi, Saguna, Kuber, Sindhu, Sampada, Punam, Kranti, Punam Gold, Akshad, Komal101, Gangotri, Bhavna, Vikrant, Saubagya, NPH242, Gayatri, Asmita, Sarathi, Ratnagiri8, Sadhana, Prasanya, Vaishnavi, Pooja, Sairam, Suvarna, Punam, Sri100, Gold

78, Kranti-89, Avni, Jaishriram Gold, Shatayu, Samrudhi, Om Shri Ram and hybrids namely Raja, Ankur 7576, SYN 5251, Loknath 505, Goraknath, Mahyko 6529, Upaj, Mahyko 5556, Ankur6444, Arize 6444, Kaveri 9090, NPH, Loknath, Arize6129, NPH 30, Ankur 7434, NP- 150, Nirmal-NPH, Tej Gold ,NP-125, Goraknath, Rasi 113 including local land races Wada, Zinia and Wada Kolam. Farmers did not follow the fertilizer schedule as per recommendation, there was also demand for varieties suitable for Direct Seeded Rice, medium duration non-lodging varieties, resistant/tolerant to biotic constraints, bio-fortified varieties with higher zinc, high iron and low GI.

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- Dr. M. P. Gawai: Jr, Rice Breeder, Regional Agricultural Research Station, Karjat, Raigad, MS
- Dr. B. D. Waghmode: Associate Director of Research and Rice Specialist, Regional Agricultural Research Station, Karjat, Raigad, MS
- Dr. P. D. Patil: Plant Pathologist, Regional Agricultural Research Station, Karjat, Raigad, MS
- Dr. V.V. Sagvekar: Agronomist, Regional Agricultural Research Station, Karjat, Raigad, MS
- Dr. V. P. Sawant, Jr. Entomologist, Regional Agricultural Research Station, Karjat, Raigad, MS.